

TABLE 1
BRUSH SPRING ANALYSIS
COMPARISONS OF BRUSH SPRING TENSION

| BRUSH PART NUMBER | STARTER GENERATOR | SPECIFIED TENSION/ OVERHAUL MANUAL | BRUSH AREA SQ. IN. | SPRING PRESSURE LOW OZ/SQ IN | SPRING PRESSURE AVERAGE OZ/SQ IN | SPRING PRESSURE HIGH OZ/SQ IN |
|----------------------|----------------------|---|--------------------------|---------------------------------------|---|--|
| N1828-1 | 23032-1022 | 40-56 oz | .294 | 136.05 | 163.26 | 190.48 |
| N1828-1 | 150SG121Q | 32-48 oz | .294 | 108.84 | 136.06 | 163.27 |
| | | | | | | |
| 23032-1380 | 23032-010 | 32-48 oz | .201 | 159.20 | 199.00 | 238.81 |
| 150SG1009-5 | 150SG111Q | 32-48 oz | .201 | 159.20 | 199.00 | 238.81 |
| | | | | | | |
| N1830-1 | 23081-018 | 28-40 oz | .237 | 118.14 | 143.46 | 168.78 |
| N1830-1 | 200SGL118Q | 30-39 oz | .237 | 126.58 | 140.57 | 164.56 |
| | | | | | | |
| N1831-1 | 23048-001 | 40-55 oz | .397 | 100.76 | 119.65 | 138.54 |
| N1831-1 | 250SG111Q | 40-55 oz | .397 | 100.76 | 119.65 | 138.54 |
| | | | | | | |
| N1831-1 | 23079-000-1 | 50-64 oz | .397 | 125.94 | 143.57 | 161.21 |
| N1831-1 | 300SGL119Q | 40-55 oz | .397 | 100.76 | 119.65 | 138.54 |
| | | | | | | |
| N1831-1 | 300SGL116Q | 40-55 oz | .397 | 100.76 | 119.65 | 138.54 |

Example: Using the table above, calculate the tension for a new brush spring that matches the desired tension in a known brush spring.

A new brush spring will be designed that will apply the same pressure on the brushes as the brushes in a 300SGL116Q. From the table above, the pressure on the brushes of a 300SGL116Q Starter-Generator = 119.65 oz/sq in.

If the size of the brush is known, such as the N1829-1 Brush = .201 sq in.

$$\text{Stress} \times \text{Area} = \text{Force}$$

Then the tension on the brush spring is: 119.65 oz/sq. in. X .201 sq. in = 24.05 oz